

44. (New) The composition of claim 4 wherein said super absorbent polymers are products of reticulation of inoculated hydrolyzed starch/ethyl acrylate copolymers, hydrolyzed inoculated starch/methyl methacrylate copolymers, hydrolyzed inoculated starch/acrylonitrile copolymers, or hydrolyzed inoculated starch/acrylamide copolymers.

45. (New) The composition of claim 4 wherein said super absorbent polymers are products of reticulation of hydrolyzed ethyl methacrylate/vinyl acetate copolymers or of hydrolyzed methyl acrylate/vinyl acetate copolymers.

REMARKS

Claims 1-3 and 5-45 are pending in this application. By this Amendment, claim 4 is canceled, claims 1-3 and 4-32 are amended and new claims 33-45 are added. No new matter is added.

Objections to Specification

The Examiner objects to the Abstract because it is more than one paragraph. Applicants have attached hereto on a separate sheet a single paragraph substitute Abstract based on the original abstract.

The Examiner also objects to claims 4-30 under 37 C.F.R. § 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim. For this reason, the Examiner only examined claims 1-3 and

31-32 in this application. With the above amendments to the claims, Applicants have placed the claims in acceptable format.

Section 112, Second Paragraph Rejection

The Examiner rejects claims 1-3 and 31-32 under 35 U.S.C. § 112, second paragraph as being indefinite for containing asserted informalities. Applicants believe that this rejection is overcome with the above amendments to the claims and reconsideration and withdrawal thereof are respectfully requested.

Section 101 Rejection

The Examiner rejects claims 31 and 32 under 35 U.S.C. § 101 because it is asserted that the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process. In the above amended claims 31 and 32, Applicants have redefined the claims into a "method of treating" form.

Section 102 Rejections

The Examiner rejects claims 1-3 under 35 U.S.C. § 102(b) as being anticipated by Su 432197. Su teaches adding 0.5 - 10.0 % polyvinylpyrrolidone to hides to cut water content. In an example, 40% salt and 1% polyvinylpyrrolidone are added to hides. Su is centered on the use of PVP which is added AFTER the treatment, and in order to merely improve some properties of the cattle hide.

PVP is obviously no superabsorbent since in the present context it is water-soluble. In Su, the PVP has absolutely no intended (or hidden or even "inherent")

function connected to any water removal. The only function of the PVP is to impart special properties to the cattle hide. This document is not relevant to the presently claimed invention.

The Examiner also rejects claims 1-3 under 35 U.S.C. § 102(b) as being anticipated by Sweet et al. Sweet et al teach controlling water activity for short-term preservation of fresh cattle hides for collagen and leather production. In particular, Sweet et al. appears to teach treating cattle hide with a combination of sodium chloride and hydrolyzed starch polyacrylonitrile graft copolymers.

Applicants have combined claim 4 into claim 1.

Sweet teaches a method for a short-term preservation of the cattle hide, while the present invention allows a very long storage and shipment time. Sweet is not a true method for a long term preservation, it is a method for a short term "protection", which need a preliminary treatment for killing the bacteria.

Additionally, the article cited on page 9 of the SNF/Brosse et al. PCT (Zimbane) contradicts Sweet.

Furthermore, the product of the present invention can be recovered and re-used, which is not the case for Sweet, where apparently the mixture is left for protection, while in the present technique the blend is used to treat the hide, then can be removed and reused for another batch.

For at least the above reasons, reconsideration of the rejections of claim 1-3 under 35 U.S.C. § 102(b) are respectfully requested.

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is

desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

Please charge any fee deficiency or credit any overpayment to Deposit Account No. 01-2300.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Robert K. Carpenter", written over a horizontal line.

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MARKED-UP AMENDMENTS TO THE CLAIMS

1. (Amended) Compositions for the preservative treatment of raw animal hides [rawhides], characterized in that such compositions contain a [at least one] mixture of:

- at least one superabsorbent (co)polymer capable of absorbing the internal moisture of the rawhide when deposited on the surface of the hide, while allowing the internal moisture necessary for good preservation of the hide to remain, and of

- at least one other hydrophilic agent,

- optionally bactericides, preservative agents, and the like,

wherein the monomers used to form the superabsorbent polymers are selected from among the following

(1) Monomers containing carboxyl groups: mono or polycarboxylic acids with monoethylene unsaturation;

(2) Monomers containing groups of the carboxylic acid anhydride type: polycarboxylic acid anhydrides with monoethylene unsaturation;

(3) Monomers containing carboxylic acid salts: water-soluble salts (alkaline metal salts, ammonium salts, amine salts, etc.) of mono or polycarboxylic acids with monoethylene unsaturation;

(4) Monomers containing sulfonic acid groups: aliphatic or aromatic vinylsulfonic acids;

(5) Monomers containing sulfonic acid groups: alkaline metal salts, ammonium salts, amino salts of monomers containing sulfonic acid groups;

(6) Monomers containing hydroxyl groups: alcohols with monoethylene unsaturation;

(7) Monomers containing amide groups: (meth)acrylamide, N-alkyl (meth)acrylamides, N,N-dialkyl (meth)acrylamides, N-hydroxyalkyl (meth)acrylamides, vinyl lactames;

(8) Monomers containing amino groups: esters containing amino groups of mono or di-carboxylic acid with monoethylene unsaturation heterocyclic vinyl compounds;

(9) Monomers containing groups of quaternary ammonium salts: salts of N,N,N-trialkyl-N-(meth)acryloyloxyalkylammonium.

2. (Amended) Compositions for the preservative treatment of raw animal hides [rawhides] as specified in claim 1, wherein the superabsorbent polymers [used] are [ones] capable of absorbing the internal moisture of the rawhide when such polymers are deposited on the surface of the hide, while allowing a residual [the internal] moisture ranging from 20 to 70% by weight based on the weight of the water-containing hide [necessary for good preservation of the hide is allowed] to remain in the hide.

3. (Amended) Compositions for the preservative treatment of raw animal hides [rawhides] as specified in claim 1 [or 2], wherein the superabsorbent polymers [used] are [ones] capable of absorbing the internal moisture of the rawhide when they

are deposited on the surface of the hide, while allowing a residual moisture [ranging from 20 to 70% by weight, preferably] of the order of 50%[,] to remain in the hide.

5. (Amended) Compositions for preservative treatment of animal rawhides as specified in claim 1 [any of claims 1 to 4], wherein the monomers used to form appropriate superabsorbent polymers are selected from among the following:

- acrylamide, acrylic acid, methacrylic acid, sulfomethylated or chloromethylated dimethylaminoethyl acrylate,
- chloromethylated or sulfomethylated dimethylaminoethyl-methacrylate.

6. (Amended) Compositions for preservative treatment of animal rawhides as specified in claim 1 [any of claims 1 to 5], wherein the superabsorbent polymers are selected from among the following:

- crosslinked [reticulated] polyacrylamides
- crosslinked [reticulated] polyacrylates
- crosslinked [reticulated] acrylamide/acrylate copolymers
- sulfomethylated or chloromethylated acrylamide/dimethylaminoethylacrylate (ADAME) copolymers
- sulfomethylated or chloromethylated acrylamide/dimethylaminoethylmethacrylate (MADAME) copolymers[.];
- crosslinked [reticulated] polymers of acrylic acid or methacrylic acid, inoculated and crosslinked [reticulated] copolymers of the polysaccharide/acrylic or methacrylic acid type, ternary crosslinked [reticulated] acrylic or methacrylic

acid/sulfonated acrylamide copolymers and their alkaline metal or alkaline earth salts, [for example, reticulation products of an acrylic acid homopolymer or of a salt of this acid, acrylic acid (or acrylic acid salt)/methacrylic acid (or methacrylic acid salt), and inoculated starch/acrylic acid (or acrylic acid salt) copolymers];

- hydrolyzates of crosslinked [reticulated] inoculated polysaccharide/acrylate or alkyl methacrylate copolymers, hydrolyzates of reticulated inoculated polysaccharide/acrylonitrile copolymers,

- hydrolyzates of crosslinked [reticulate] polysaccharide/acrylamide copolymers, [for example, products of reticulation of inoculated hydrolyzed starch/ethyl acrylate copolymers, hydrolyzed inoculated starch/methyl methacrylate copolymers, hydrolyzed inoculated starch/acrylonitrile copolymers, and hydrolyzed inoculated starch/acrylamide copolymers];

- hydrolyzates of crosslinked [reticulated] alkyl/vinyl acetate acrylate or methacrylate copolymers[, for example, products of reticulation of hydrolyzed ethyl methacrylate/vinyl acetate copolymers and of hydrolyzed methyl acrylate/vinyl acetate copolymers];

- hydrolyzates of crosslinked [reticulated] inoculated starch/acrylonitrile/acrylamide/2-methylpropane sulfonic acid copolymers;

- hydrolyzates of crosslinked [reticulated] inoculated starch/acrylonitrile/vinylsulfonic acid copolymers; of reticulated sodium carboxymethylcellulose and analogous products and mixtures of such products[, preferably];

- crosslinked [reticulated] polymers of acrylic or methacrylic acid; crosslinked [reticulated] inoculated polysaccharide/acrylic or methacrylic acid

copolymers, ternary crosslinked [reticulated] acrylic or methacrylic acid/acrylamide/sulfonated acrylamide copolymers.

7. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 6], wherein such compositions comprise mixtures of superabsorbents [such as are described or obtained in claims 1 to 6].

8. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 7], wherein such compositions comprise mixtures of superabsorbents [such as are described in claims 1 to 6], of different grain sizes adapted to obtain optimal coverage of the surface of the hide.

9. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 8], wherein such compositions comprise mixtures of superabsorbents [such as are described in claims 1 to 6], of different chemical composition.

10. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 9], wherein such compositions comprise mixtures of superabsorbents [such as are described in claims 1 to 6], of different grain size and chemical composition.

11. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 10], wherein such compositions comprise mixtures of superabsorbents [such as are described in claims 1 to 10] and at least one hydrophilic or hygroscopic agent.

12. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 11], wherein such compositions include the salt NaCl as the at least one other hydrophilic agent [hygroscopic agent].

13. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 12], wherein such compositions include CaCl₂, MgCl₂ or KCl as the at least one other hydrophilic agent [hygroscopic agent].

14. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 13], wherein the ratios of the superabsorbent polymer and the other hygroscopic agent or agents range from 80 to 20% by weight.

15. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 14], wherein the ratios of the superabsorbent polymer to the other hygroscopic agent or agents range from 65 to 35% by weight.

16. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 14], wherein the ratio [ratios] of the superabsorbent polymer to the other hygroscopic agent or agents is about [range from] 50/50% by weight.

17. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 16], wherein the superabsorbent polymers have a grain size smaller than approximately 6 mm and preferably ranging from 0.3 to 4 mm.

18. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 17], wherein the superabsorbent polymers have a particle size ranging from 0.5 to 3 mm.

19. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 18], wherein the superabsorbent polymers have a grain size around 0.3 to 1 mm.

20. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 19], wherein a portion of grains of the superabsorbent polymers have a fine grain size and another portion have [combined with] a coarser grain size.

21. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 20], wherein such compositions contain [various] additives [such as bactericides, antiseptics, preservation agents, and the like].

22. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 21], wherein such compositions contain at least one bactericide.

23. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 22], wherein such compositions contain at least one additive and/or one bactericide selected from among the following and mixtures thereof:

- Phenotip (TM)
- Actacid L.A. (TMEC)

24. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 23], wherein such compositions contain the following superabsorbents and hygroscopic agent:

NaCl + SAP 1 (reticulated polyacrylate; grain size 0.5-3 mm) or

SAP 2

(Reticulated polyacrylate; grain size 100-800 microns) or

SAP 1 + SAP 2

(Reticulated polyacrylate + reticulate acrylamide/acrylate copolymer, grain size 0.1 to 3 mm) or

SAP 3

(Chloroethylated, reticulated MADAME acrylamide copolymer, grain size 0.5-3 mm) or

SAP 4

(Chloromethylated, reticulated ADAME acrylamide copolymer, grain size 0.5-3 mm)

25. (Amended) Compositions for preservative treatment of raw animal hides as specified in claim 1 [any of claims 1 to 24], wherein such compositions contain the following agents:

SAP Aquasorb 3005 KL (TM) reticulated acrylamide/acrylate

200 g/kg hide

NaCl 200 g/kg hide.

26. (Amended) A process for preservative treatment of raw animal hides, comprising contacting [characterized in that such process comprises at least one stage of contact of] a hide with a preservative composition as specified in claim 1 [any of claims 1 to 25].

27. (Amended) A process for preservative treatment of raw animal hides, wherein such process comprises at least one stage of contact of a hide, on the surface

opposite the hair, with a preservative composition as specified in claim 1 [any of claims 1 to 25].

28. (Amended) A process for preservative treatment of raw animal hides as specified in claim 26 [or 27], wherein such contact is continued for a period of around 24 h.

29. (Amended) Animal hides, characterized in that such hides have been treated for preservation with a composition as specified in claim 1 [any of claims 1 to 25].

30. (Amended) Animal hides, characterized in that such hides have been treated for preservation by a process as specified in claim 26 [any of claims 26 to 28].

31. (Amended) A method for preserving an animal hide comprising applying an effective amount [Utilization] of superabsorbent polymer(s) SAP to the animal hide [for preservation of animal hides].

32. (Amended) A method for preserving an animal hide comprising applying an effective amount [Utilization] of superabsorbent polymer(s) SAP and one or more hygroscopic agent(s) to the animal hide [for preservation of animal hides].

ABSTRACT

The invention relates to use of superabsorbent (co)polymers (SAP) as an agent for preservation treatment of animal hides. The SAP is used preferably in conjunction with salt or other hygroscopic agent, in particular 50% NaCl/50% SAP by weight. Suitably treated hides are obtained in 24 hours and one-half less salt is used in comparison to the prior art, disadvantages such as surface brine, salt in slaughterhouse waste, and others being eliminated.